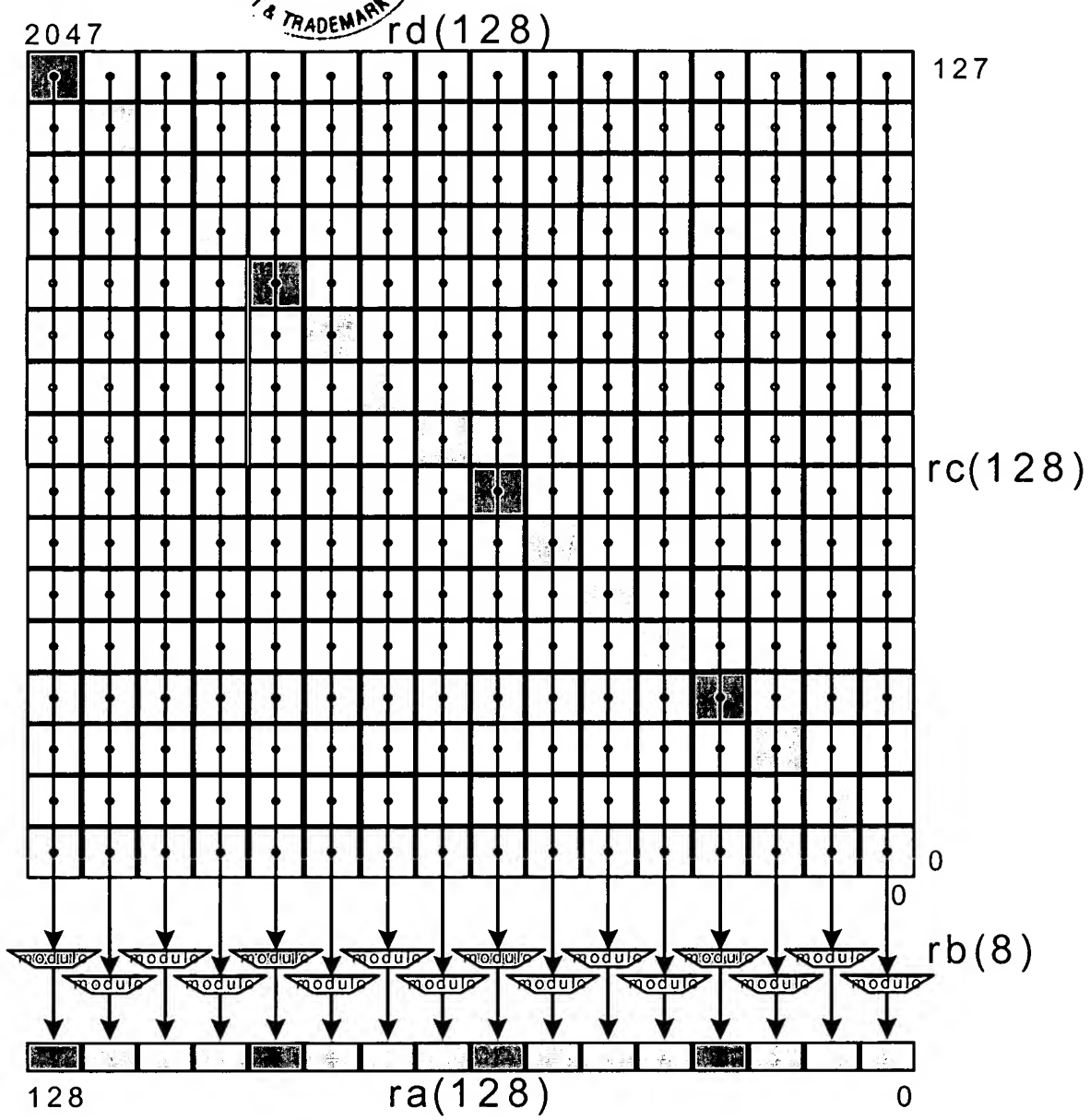
Definition

```
def GroupTernary(op,size,rd,rc,rb,ra) as
    d ← RegRead(rd, 128)
    c ← RegRead(rc, 128)
    b ← RegRead(rb, 128)
    case op of
        G.MUX:
            a ← (c and d) or (b and not d)
    endcase
    RegWrite(ra, 128, a)
enddef
```

Exceptions

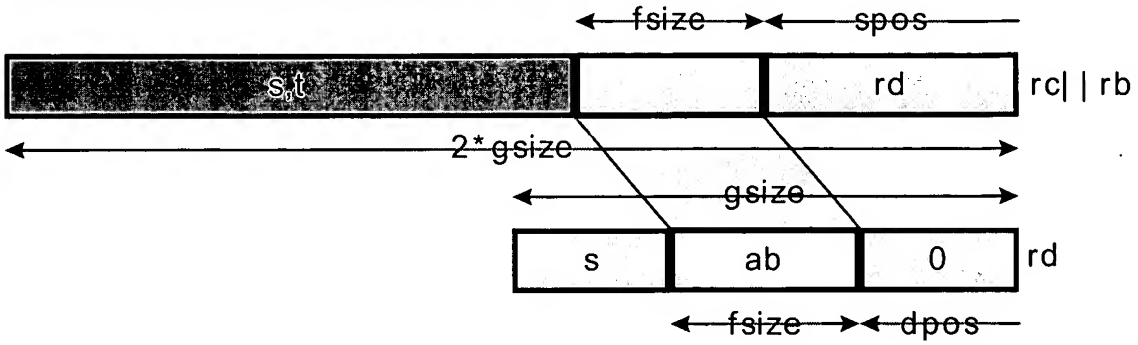
none

Fig. 31E



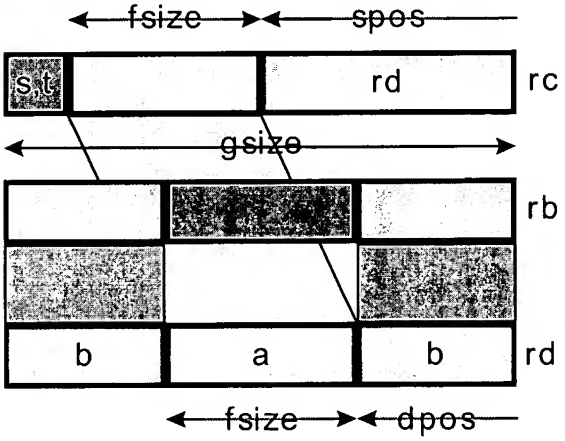
Ensemble multiply Galois field bytes

Fig. 42D



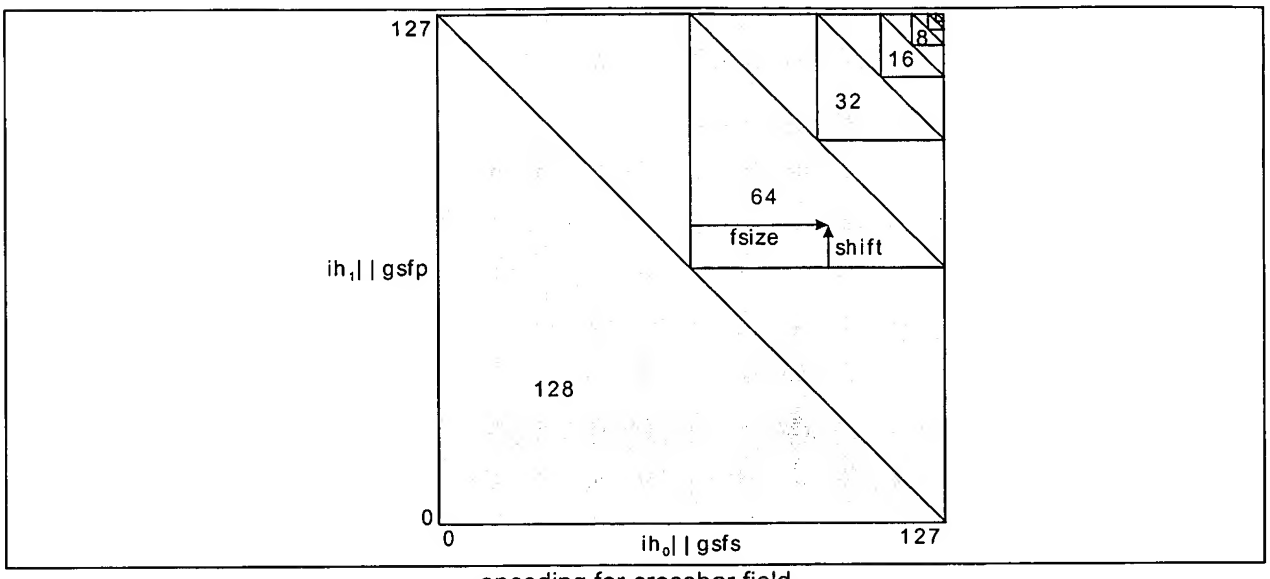
Crossbar extract

Fig. 44C



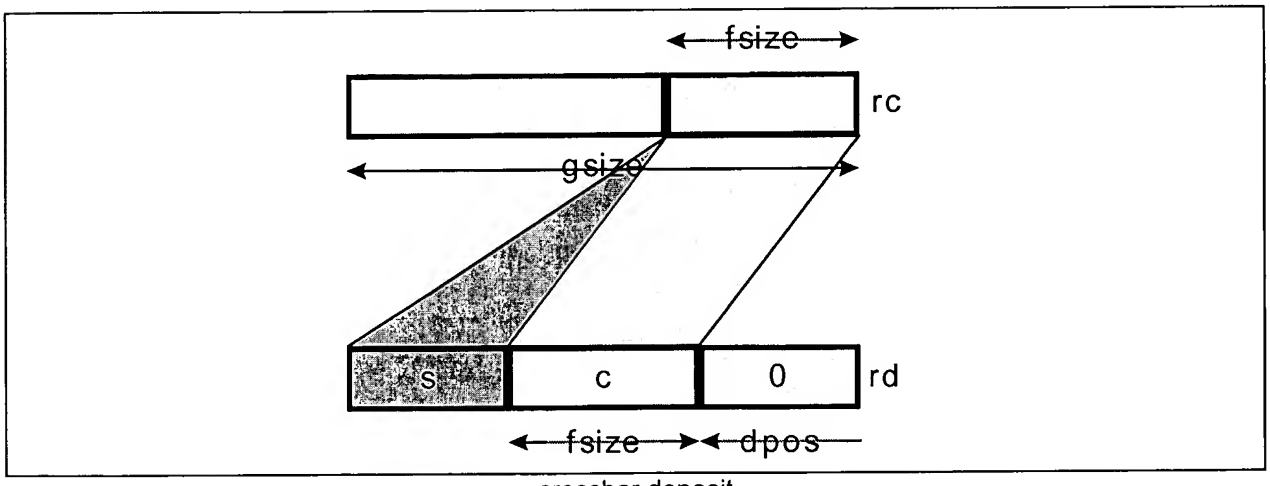
Crossbar merge extract

Fig. 44D



encoding for crossbar field

Fig. 45D



crossbar deposit

Fig. 45E

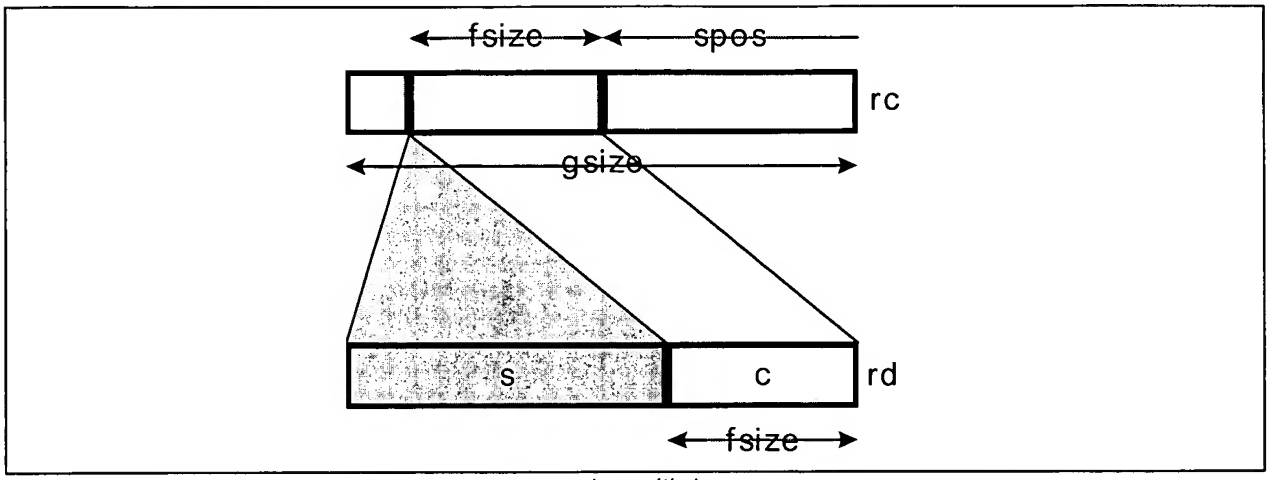


Fig. 45F

Operation codes

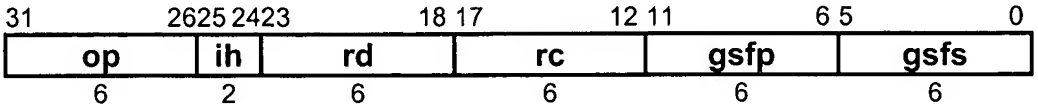
X.DEPOSIT.M.2	Crossbar deposit merge pecks
X.DEPOSIT.M.4	Crossbar deposit merge nibbles
X.DEPOSIT.M.8	Crossbar deposit merge bytes
X.DEPOSIT.M.16	Crossbar deposit merge doublets
X.DEPOSIT.M.32	Crossbar deposit merge quadlets
X.DEPOSIT.M.64	Crossbar deposit merge octlets
X.DEPOSIT.M.128	Crossbar deposit merge hexlet

Fig 45G

Format

X.op.gsize rd@rc,isize,ishift

rd=xopgsize(rd,rc,isize,ishift)



assert isize+ishift ≤ gsize
assert isize≥1
ih_0 || gsfs ← 128-gsize+isize-1
ih_1 || gsfp ← 128-gsize+ishift

Fig 45H

Definition

```
def CrossbarFieldInplace(op,rd,rc,gsfp,gsfs) as
    c ← RegRead(rc, 128)
    d ← RegRead(rd, 128)
    case ((op1 || gsfp) and (op0 || gsfs)) of
        0..63:
            gsize ← 128
        64..95:
            gsize ← 64
        96..111:
            gsize ← 32
        112..119:
            gsize ← 16
        120..123:
            gsize ← 8
        124..125:
            gsize ← 4
        126:
            gsize ← 2
        127:
            raise ReservedInstruction
    endcase
    ishift ← (op1 || gsfp) and (gsize-1)
    isize ← ((op0 || gsfs) and (gsize-1))+1
    if (ishift+isize>gsize)
        raise ReservedInstruction
    endif
    for i ← 0 to 128-gsize by gsize
        a[i+gsize-1..i] ← d[i+gsize-1..i+isize+ishift] || c[i+isize-1..i] || d[i+ishift-1..i]
    endfor
    RegWrite(rd, 128, a)
enddef
```

Exceptions

Reserved instruction

Fig 45l

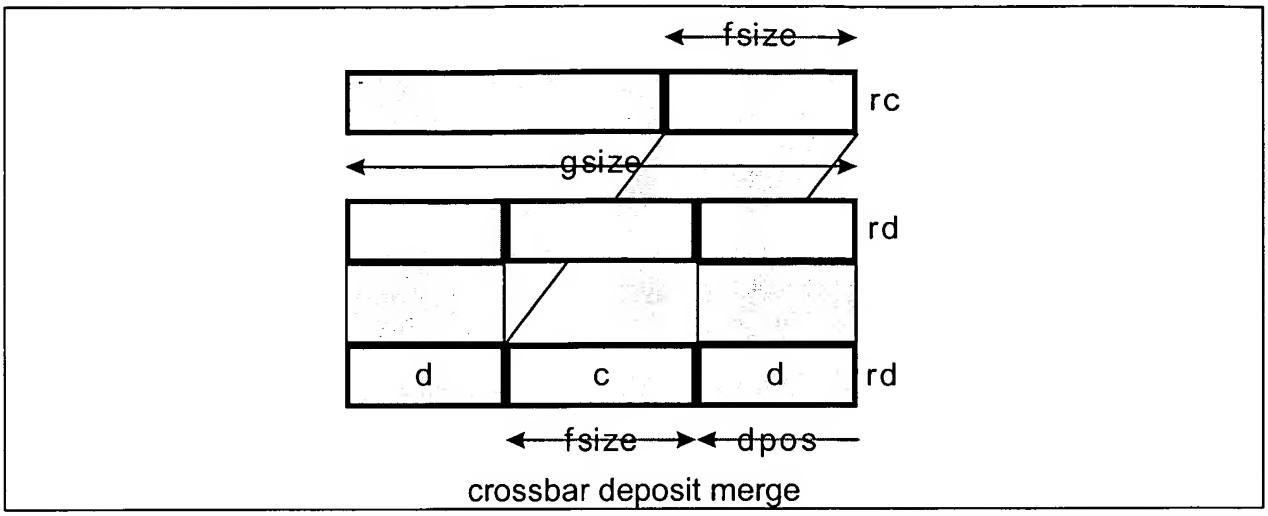


Fig 45J

Operation codes

G.MUX	Group multiplex

Redundancies

G.MUX ra=rd,rc,rc	⇔	*G.COPY ra=rc*
G.MUX ra=ra,rc,rb	⇔	G.BOOLEAN ra@rc,rb,0x11001010
G.MUX ra=rd,ra,rb	⇔	G.BOOLEAN ra@rd,rb,0x11100010
G.MUX ra=rd,rc,ra	⇔	G.BOOLEAN ra@rd,rc,0x11011000
G.MUX ra=rd,rd,rb	⇔	G.OR ra=rd,rb
G.MUX ra=rd,rc,rd	⇔	G.AND ra=rd,rc

Format

G.MUX ra=rd,rc,rb

ra=gmux(rd,rc,rb)

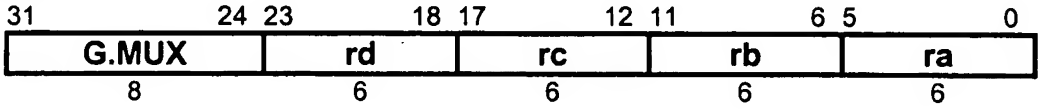


Fig. 31D

Definition

```
def GroupTernary(op,size,rd,rc,rb,ra) as
    d ← RegRead(rd, 128)
    c ← RegRead(rc, 128)
    b ← RegRead(rb, 128)
    case op of
        G.MUX:
            a ← (c and d) or (b and not d)
    endcase
    RegWrite(ra, 128, a)
enddef
```

Exceptions

none

Fig. 31D